

Report Information
from Dialog DataStar



Table of Contents

DataStar Documents.....	1
Anomalous first-phase formation in rapidly thermal annealed, thin-layered Si/Ni/Si films.....	1
Enhanced thermal stability of NiSi films on Si(111) substrates by a thin Pt interlayer.....	1
Search Strategy.....	3

Anomalous first-phase formation in rapidly thermal annealed, thin-layered Si/Ni/Si films.

Dialog eLinks

Full text options [USPTO Full Text Retrieval Options](#)

Accession number & update

0002766722 20070101.

Source

Applied Physics Letters, {Appl-Phys-Lett-USA}, 4 Aug. 1986, vol. 49, no. 5, p. 257-9, 12 refs, CODEN: APPLAB, ISSN: 0003-6951, USA.

Author(s)

Natan-M.

Author affiliation

Natan, M., Martin Marietta Corp., Baltimore, MD, USA.

Abstract

The initial stages of silicide formation in very thin-layered Si/Ni/Si films reacted by rapid (pulsed) annealings were investigated using the rapid thermal annealing/transmission electron microscopy technique. At least four phases, **NiSi**, $\delta\text{Ni}/\text{Si}$, $\theta\text{Ni}/\text{Si}$, and $\text{Ni}_{31}/\text{Si}_{12}$, are shown to form first after 1 s annealings in the 175-300°C temperature regime; the actual phase and its nucleation kinetics depend on the Si:Ni **ratio** and on substrate deposition temperature. An amorphous (Ni+Si) mixture is shown to exist as a precursor to $\theta\text{Ni}/\text{Si}$ and **NiSi**. The multiplicity of 'first' phases and the dependence on the Si:Ni **ratio** contradict various 'first-phase' rules and steady-state annealing data obtained on thicker films and in metal-Si wafer reactions. A simple model that accounts for the stoichiometry and substrate-temperature dependences is suggested.

Language

English.

Publication year

1986.

Copyright statement

Copyright 1986 IEE.

((c) 2008 The Institution of Engineering and Technology)

Enhanced thermal stability of NiSi films on Si(111) substrates by a thin Pt interlayer.

Dialog eLinks

Full text options [USPTO Full Text Retrieval Options](#)

Accession number & update

0006835791 20070101.

Source

Journal of Crystal Growth, {J-Cryst-Growth-Netherlands}, Dec. 2000, vol. 220, no. 4, p. 488-93, 20 refs, CODEN: JCRGAE, ISSN: 0022-0248. Publisher: Elsevier, Netherlands.

Author(s)

Liu-J-F, Chen-H-B, Feng-J-Y.

Author affiliation

Liu, J.F., Chen, H.B., Feng, J.Y., Dept. of Mater. Sci. & Eng., Tsinghua Univ., Beijing, China.

Abstract

A thin interlayer of Pt can greatly enhance the thermal stability of **NiSi** films formed by rapid thermal annealing (RTA) on Si(111) substrates, as was revealed by X-ray diffraction (XRD) data and sheet resistance measurement. High-resolution transmission electron microscopy (HRTEM) reveals a well-defined interface between the Ni(Pt) Si film and the Si(111) substrate for the Ni/Pt/Si sample annealed at 640°C. The orientation relationship in this sample determined by selected area electron

diffraction (SAED) was **NiSi(100)**parallel/Si (111) and **NiSi(01 $\overline{1}$ 0)**parallelSi(011 $\overline{1}$). With the increase of temperature, the texture of **NiSi** films transform from **NiSi(100)** parallelSi(111) to **NiSi(001)**parallelSi(111). The reduction in the interfacial energy due to the formation of the (100) textured **NiSi** film is proposed as a possible reason for the improved thermal stability of **NiSi** and the transition in **NiSi** texture during high– temperature annealing. Detailed study on the XRD data combined with Auger electron spectra (AES) indicates PtSi and **NiSi** form a solid solution following Vegard's law, which adjusts the lattice constant **ratio** c/b to $\sqrt{3}$ and may account for the texture of **NiSi(100)** parallelSi(111).

Language

English.

Publication year

2000.

Copyright statement

Copyright 2001 IEE.

((c) 2008 The Institution of Engineering and Technology)

Search Strategy

No.	Database	Search term	Info added since	Results
1	INZZ	(nickel ADJ monosilicide OR NiSi) AND ratio	unrestricted	60

Saved: 26-Apr-2008 02:18:53 MEST